

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Please amend the claims as follows:

1-38. (Canceled).

39. (Currently amended) An apparatus comprising:
a cache to hold a first cache line; and
a correlation prefetcher to prefetch to the cache a second cache line correlated with the first cache line, wherein the correlation prefetcher is to identify the second cache line as being correlated with the first cache line based on an age of the second cache line relative to that of the first cache line.

40. (Previously presented) The apparatus of claim 39, wherein the correlation prefetcher is to prefetch the second cache line from another cache.

41-42. (Canceled)

43. (Previously presented) The apparatus of claim 39, wherein the correlation prefetcher is to prefetch the second cache line from a set associative cache having the first and second cache lines in a same set.

44. (Previously presented) The apparatus of claim 39, wherein the correlation prefetcher is to identify the second cache line based on a link associated with the first cache line.

45. (Previously presented) The apparatus of claim 44, wherein the cache is to hold the link in association with the first cache line.

46. (Previously presented) The apparatus of claim 39, wherein the correlation prefetcher is to identify a correlated cache line for multiple cache lines.

47. (Previously presented) The apparatus of claim 46, wherein the correlation prefetcher is to generate a link identifying a correlated cache line for multiple cache lines.

48. (Previously presented) The apparatus of claim 46, wherein the correlation prefetcher is to identify from one set of a set associative cache a correlated cache line for multiple cache lines in the one set.

49. (Canceled)

50. (Previously presented) The apparatus of claim 39, wherein the correlation prefetcher is to prefetch the second cache line to replace the first cache line.

51. (Previously presented) The apparatus of claim 39, comprising a predictor to identify whether the first cache line is to be replaced.

52. (Previously presented) The apparatus of claim 51, wherein the predictor is to identify whether the first cache line is to be replaced based on instructions that used the first cache line during a current residency in the cache.

53. (Previously presented) The apparatus of claim 51, wherein the predictor is to identify whether the first cache line is to be replaced based on an age of the first cache line relative to an age value.

54. (Previously presented) The apparatus of claim 51, wherein the predictor is to identify whether the first cache line is to be replaced based on an age of the first cache line relative to that of other cache lines in the cache and relative to an age value.

55. (Previously presented) The apparatus of claim 51, wherein the predictor is to identify whether the first cache line is to be replaced based on whether the first cache line is likely to be used at an age beyond an age value.

56. (Previously presented) The apparatus of claim 39, wherein the cache is to hold a third cache line and wherein the correlation prefetcher is to prefetch a fourth cache line based on how recent the fourth cache line has been used if the correlation prefetcher is to not prefetch a cache line correlated with the third cache line.

57. (Previously presented) The apparatus of claim 39, wherein the cache is to hold a third cache line and wherein the correlation prefetcher is to prefetch a fourth cache line based on how frequent the fourth cache line has been used if the correlation prefetcher is to not prefetch a cache line correlated with the third cache line.

58. (Currently amended) A method comprising:
holding a first cache line in a cache;
identifying a second cache line correlated with the first cache line based on an age of the second cache line relative to that of the first cache line; and
prefetching the second cache line to the cache.

59-60. (Canceled)

61. (Previously presented) The method of claim 58, wherein the identifying includes identifying the second cache line from a set associative cache having the first and second cache lines in a same set.

62. (Previously presented) The method of claim 58, wherein the prefetching includes prefetching the second cache line to replace the first cache line.

63. (Previously presented) The method of claim 58, comprising identifying whether the first cache line is to be replaced based on instructions that used the first cache line during a current residency in the cache.

64. (Previously presented) The method of claim 58, comprising identifying whether the first cache line is to be replaced based on an age of the first cache line relative to an age value.

65. (Previously presented) The method of claim 58, comprising identifying whether the first cache line is to be replaced based on an age of the first cache line relative to that of other cache lines in the cache and relative to an age value.

66. (Previously presented) The method of claim 58, comprising identifying whether the first cache line is to be replaced based on whether the first cache line is likely to be used at an age beyond an age value.

67. (Previously presented) The method of claim 58, comprising:
holding a third cache line in the cache; and
prefetching a fourth cache line based on how recent the fourth cache line has been used if a cache line correlated with the third cache line is not to be prefetched.

68. (Previously presented) The method of claim 58, comprising:
holding a third cache line in the cache; and
prefetching a fourth cache line based on how frequent the fourth cache line has been used if a cache line correlated with the third cache line is not to be prefetched.

69-72. (Canceled)

73. (Currently amended) A system comprising:
a processor including a cache to hold a first cache line and including a correlation prefetcher to prefetch to the cache a second cache line correlated with the first cache line based on an age of the second cache line relative to that of the first cache line; and
~~an audio input/output device~~ memory coupled to said processor.

74-75. (Canceled)

76. (Previously presented) The system of claim 73, wherein the processor includes a predictor to identify whether the first cache line is to be replaced.

77. (New) An apparatus comprising:
a cache to hold a first cache line; and
a correlation prefetcher to prefetch to the cache a second cache line correlated with the first cache line, wherein the correlation prefetcher is to identify the second cache line as being correlated with the first cache line based on how frequent the second cache line is loaded subsequent to the first cache line.

78. (New) A method comprising:
holding a first cache line in a cache;
identifying a second cache line correlated with the first cache line based on how frequent the second cache line is loaded subsequent to the first cache line;
and
prefetching the second cache line to the cache.

79. (New) A system comprising:
a processor including a cache to hold a first cache line and including a correlation prefetcher to prefetch to the cache a second cache line correlated with the first cache line based on how frequent the second cache line is loaded subsequent to the first cache line; and
memory coupled to said processor.